

## A New Pterostichine Beetle of the Subgenus *Nialoe* Tanaka from South Korea (Coleoptera, Carabidae)

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**Abstract** A new pterostichine species, *Pterostichus (Nialoe) jogaesensis* sp. nov., is described from Korea, with illustration of adult, its male genitalia and last abdominal sternite.

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**Key words** Taxonomy, Carabidae, *Pterostichus*, *Nialoe*, new species, Korea

### INTRODUCTION

The species belonging to the subgenus *Nialoe* Tanaka, 1958 is distributed in Japan and Korea. These species are rather large apterous ground-beetles dwelling forest region in mountain and usually have comparatively limited distributional range. Up to last time, four species of this subgenus were known in Korea described by Tschitschérine, 1895, 1901 who is famous Russian specialist of Carabidae, based mainly on P. Schmidt's collection in 1900.

Our joint investigation on the subgenus *Nialoe* and other related subgenera belonging to the genus *Pterostichus* Bonelli was initiated in 1994. At the same year the preliminary results were included to Park's thesis (1994) and a part of them were published by Park and Kwon (1996). According to those works, the subgenus *Nialoe* comprise eight species in Korea at the present, including three new described species. However, in mentioned works, a species was erroneously included into the subgenus *Nialoe* (*Pterostichus omoensis* Jedlicka surely belongings to the subgenus *Koreonialoe* Park et Kwon, 1996) and the other species left on the row of reasons undescribed. In this paper the description of the latter is given.

At the first time *Pterostichus jogaesensis* was discovered by us during brief survey in near Songgwang Temple in 1994 in Mt. Jogyesan. In the next year, additional material was obtained by us at Mt. Jogyesan near Seonam Temple and near Neahea in Mt. Baekunsan. Both mountains are in the south

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of the Korean Peninsula at the Jeollanamdo Province and more or less isolated branches of the Sobaek mountain range. Mt. Jogyesan, ca. 884 m is located approximately in 18–22 km north-western of Suncheon City and Mt. Baekunsan, ca. 1218 m is situated about 23 km north-eastern of Suncheon City.

The abbreviations used in the paper are as follows: HL—length of head from apex of clypeus to hind edges of tempora; HW—the greatest width of head; PA—width of pronotal apex; PW—the greatest width of pronotum; PB—width of pronotal base; PLt—full length of pronotum; PL—length of pronotum along median line; EL—length of elytra from level of basal border at shoulder to elytral apex; EW—the greatest width of elytra; L—full length of beetle from the tips of mandibles to elytral apex; Ls = HL+PLt +EL. Provinces of Korea : JN—Jeollanamdo; GN—Gyeongsangnamdo; GB—Gyeongsangbukdo; GW—Gangweondo. IBP—Institute of Biology and Pedology, Vladivostok, Russia; KNU Kyungpook National University, Taegu, Korea; SJU—Sangju National University, Sangju, Korea; SCU—Suncheon National University, Suncheon, Korea.

Before going further we wish to express our deep gratitude to Prof Y.J. Kwon of the Kyungpook National University, Taegu, Korea for his allowance to investigate beetles preserved in his laboratory, and Mr. C.S. Moon of the Suncheon National University, Suncheon, Korea for his kind help during our collection trips, and also to Prof. G.S. Medvedev and Mr. B. M. Kataev of the Zoological Institute, S.-Petersburg, Russia, for their courteous sending Tschitscherin's types for our investigation.

### ***Pterostichus (Nialoe) jogaesanensis* sp. nov 조계길쭉먼지벌레**

(Figs 1–7)

*Pterostichus (Nialoe) silvicola*: Park, 1994: 69–71, Figs 5–5, A–I (nomen nudum).

*Pterostichus (Nialoe) jogaesanensis*: Park et Kwon, 1996: 117 (nomen nudum). Park et Paik, 2001: 61, 157 (Fig. 27) (nomen nudum).

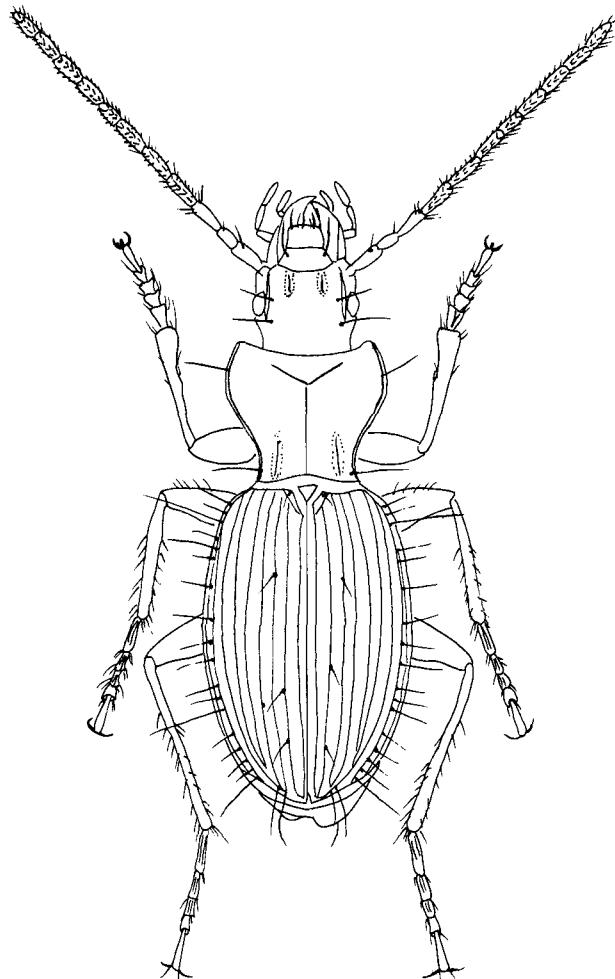
**Colour.** Dorsum of body brownish black or dark brown. Eyes black. Ventrum of body, palpi, antennae and legs reddish brown.

**Luster.** Dorsum of body usually fairly shiny; elytra sometimes are less shiny than head and pronotum. Females are also sometimes less shiny than males.

**Microsculpture.** Head with gentle isodiametric reticulation and with sparse micropunctures. Pronotum usually almost smooth or with traces of transverse meshes. Elytra only with traces of reticulation of transverse meshes, in females sometimes with distinct reticulation.

**Measurements.** Body length (2 males and 5 females were measured) 11.85–14.20 mm, width of elytra 4.30–5.30 mm, the greatest width of pronotum 3.25–4.00 mm. Males are usually smaller than females. Apparently, the smallest beetles most dwell in the southern part of Korea and the holotype is chosen the smallest specimen among the type series; its sizes (in mm) are as follows : HL 1.75, HW 2.30, PA 2.45, PW 3.25, PB 2.10, PLt 2.74, PL 2.25, EL 6.30, EW 4.30, L 11.85, Ls 10.79.

**General shape.** *Pterostichus jogaesanensis* is the smallest species in the subgenus *Nialoe* with graceful and explanate shape of body, with cup-shaped pronotum strongly narrowed posteriad, with short and wide elytra. Head large, widest usually at the level of eyes, with swollen genae (under eyes) and tempora. Eyes not large but convex, prominent a little more than genae under them, in lateral view look

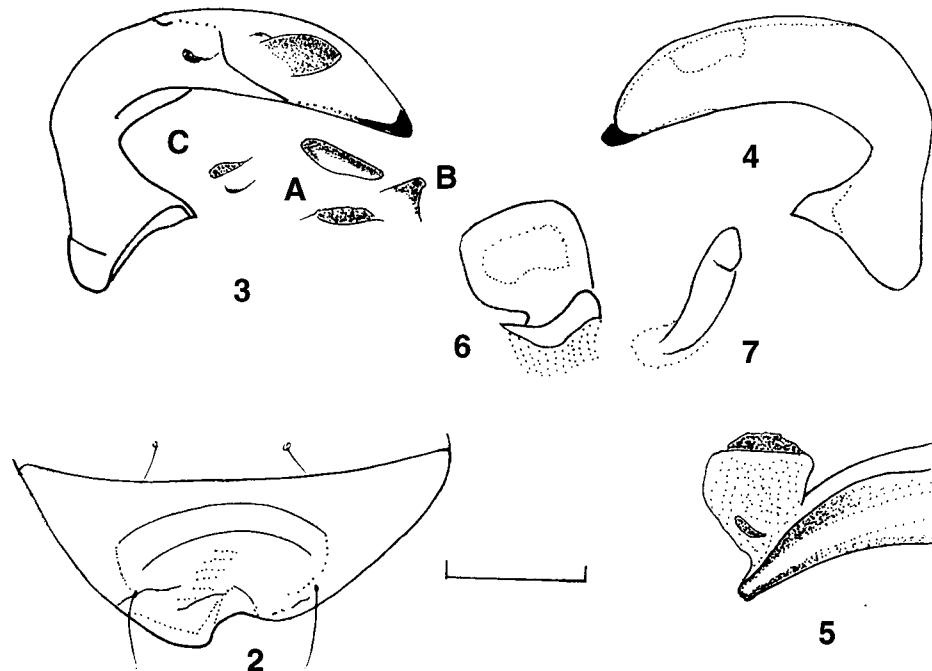


**Fig. 1.** *Pterostichus (Nialoe) jogaesaneensis* sp. n., holotype.

like almost circular, strongly removed form maxillary fissure. Supraorbital carina strong, accompanied inside by deep supraorbital groove that extend posteriad more than eye<sup>1</sup> at hind end of the latter the posterior supraorbital seta attached, slightly behind of hind margin of eye.

Tempora rounded, only a little shorter than eyes. Dorsum of head smooth and shiny. Frontal furrows long and deep, more or less parallel, dilated anteriad and posteriad, not reached at the level of anterior supraorbital setae and invaded into clypeus to setiferous pores, sometimes with a few punctures. Clypeus with weak transverse impression between setae. Labrum transverse, slightly asymmetrical, with apex feebly emarginated. Mandibles weakly elongate with oblique wrinkles on upper side. Left mandible is hook-shaped at apex. Antennae rather long (about 8 mm), pubescent and flattened beginning segment 4, segment 2 sometimes with one additional seta. Length of antennal segment (in mm) from 1st to 11th in

<sup>1</sup> On the length of supraorbital grooves and the location of hind supraorbital setae it is possible to do conclusion that eyes are weakly reduced.



**Figs 2-7.** *Pterostichus (Nialoe) jogaesanensis* sp. n. Last abdominal sternite and male genitalia: 2. last abdominal sternite in ventral view; 3. penis in left lateral view (A, B—copulatory pieces in different views; C. chitinized lobe); 4. penis in right lateral view; 5. apical part of penis in dorsal view; 6. right paramere, outside; 7. left paramere, outside. Scale 2 mm.

the holotype are as follows: 0.70, 0.40, 0.70, 0.75, 0.75, 0.70, 0.70, 0.65, 0.60, 0.60, 0.65. Width of scapus 0.3 mm and all other segments 0.25 mm. Palpi are of middle sizes. Maxillary palpi with penultimate and apical segments nearly equal length, apical segment weakly fusiform with blunt tip. Penultimate segment with two long setae at anterior margin in the middle. Mentum at apex strongly emarginate, with tooth broad and bifid and with two setae at its base. Epilobes slender. Oblique grooves of mentum dilated posteriad and with a pore of labial organ. Submentum at each side with 2–3 long setae.

Pronotum fairly cordate and weakly transverse (PW/HW 1.36–1.44, PW/PLt 1.04–1.20, PW/PL 1.36–1.44), broadest at about apical two-fifths, strongly narrowed posteriad (PW/PB 1.53–1.65, PB/PA 1.33–1.39). Pronotal lateral margins strongly convex at maximal width and strongly concaved before long hind angles, just before hind angles slightly divergent. Lateral beads and lateral gutters narrow. Pronotal apex deeply emarginate, anterior angles prominent, less than 90°, narrowly rounded at tip. Hind margin noticeably narrower than pronotal apex (PB/PA 0.85–0.90), not marginate, widely concaved at the middle, hind angles a little less than 90°, angulate at tip, without denticle. Disk explanate and almost throughout smooth but front angles turned down. Median line fine and distinct only between anterior and posterior transverse impressions; the latter ones weak, sometimes indistinct. Pronotal base at each side with one deep, narrow and long longitudinal linear basal fovea, slightly bended at its middle.

Pronotal base near basal foveae with fine sparse punctures and gentle transverse wrinkles, area between basal fovea and lateral margin flattened. Pronotum at each side with two lateral seta: anterior pair is located just before broadest width, posterior one—just before hind angles. Scutellum with wide transverse impression.

Elytra oval, rather short and wide, widest at the middle (EL/EW 1.39–1.50, EL/PLt 2.22–2.30; EW/PW 1.27–1.34), flattened, with feebly rounded lateral margins and with widely rounded shoulders, without humeral denticles and with feeble apical sinuations. Apices of elytra rather widely conjointly rounded with a small re-entrant angle at suture, sutural angles rounded. Base of each elytron before basal border with impression, basal border almost transverse and connected with lateral bead under very obtuse but distinct angle.

Elytral stria full, regular and moderately deep, not punctate. Stria 1 (sutural stria) jointed anteriorly usually with its inner branch almost without bend; its outer branch isolated and formed short oblique or arcuate stria that connected anteriorly with the base of stria 2; near of their connection a basal setiferous pore is located. Sometimes outer branches are fairly reduced to some punctures. Elytral intervals broad and almost flattened (inner ones) or weakly convex. Discal setiferous pores usually are in interval three and located nearly symmetrically: anterior pair situated at about basal quarter (0.27) adjoining stria 3, median and posterior setae adjoining stria 2 (median ones at the middle or just behind it, in 0.53; posterior pair at about four-fifth, or 0.78). In one female from Mt. Paekunsan there are also one discal setiferous pore in interval 5 at each elytron; they situated adjoining stria 4 symmetrically at about basal 4/5. Stria 7 with two apical pores near tip, both in area of preapical pore. Lateral umbilicate series include 15–19 pores, 6(8)+1+1+7(9) and slightly divided into two groups. All the elytral setiferous pores distinct. Elytral plica almost not reached lateral margin. Wingless.

Ventral side of body smooth, shiny, without punctuation or slightly punctate at sides of mesosternum and at sides of abdominal sternites. Pronotal intercoxal process bordered at tip (sometimes indistinct) and with long median impression. Metepisterna short and broad, impunctate. Last visible sternite in male in ventral view rather deeply and narrowly emarginate and with two uneven asymmetrical rounded lobes, with short lobe at the right side and with long one at the left side, and with transverse deep and ample impression before lobes, with two setae at apex.

Last visible abdominal sternite in female very widely rounded (almost truncate) at apex, sometimes slightly concaved in the middle, with four setae. Legs rather long and slender, meso- and metatarsi with well developed furrows and carina outside and with less developed ones inside. Segment 4 of all tarsi emarginate at tip, almost bilobed at protarsi. Segment 5 of all tarsi glabrous at ventral side. In male, segments 1–3 of protarsi triangularly dilated and supplied with adhesive sole. Hind coxa without inner seta. Meso- and metafemora with two setae along hind margin. Matatrochanters with one seta, almost acute at apex.

*Male genitalia.* Penis tubercular, without additional lobe, strongly curved at apical part. Apical part long, twisted to the left side about 90°. Apical lamella short, subtriangle-shaped, rounded at tip. Endofallus with two black copulatory pieces. Left paramere wide, truncated at apex and with rounded dorsal margin. Right paramere small, almost straight, feebly swollen, and rounded at apex.

*Female genitalia.* Hemisternites with numerous setae along posterior margin. Coxites with two setae.

Styluses narrow; almost straight with narrowly rounded tip, with 1–2 fine spines at inner (ventral) margin near its base and without spines at outer (upper) margin; the furrow complex of sensilla with two short nematoid setae is located near tip of stylus. Vagina has front wall slightly sclerotized and light brown. Entrance orifice of spermathecal duct opens on dorsal wall at oviduct near its base between two small black sclerites of oval shape.

*Diagnosis.* From sympatric species of the subgenus *Nialoe*, *P. jogaesanensis* is distinguished by smaller sizes, fairly cordate pronotum strongly narrowed posteriad, rather shiny dorsum of body (in *P. scurrus* elytra of females usually almost dull). But the main diagnostic features are the shape of the last visible abdominal sternite with two asymmetric rounded lobes and the structure of the genitalia in the male. From *P. audax*, the new species can easily distinguish by absence of transverse impression on abdominal sternite 1.

*Type series.* 9ex. Holotype: 1♂, Mt. Jogyesan near Songgwang-sa Temple, about 22 km NW of Suncheon, JN, Korea, 10 VIII 1994 (G.Sh. Lafer), SCU. Paratypes: 1♀, Mt. Jogyesan, near Seonam Temple, 9 VIII 1995 (J.C. Paik), SCU; 1♂, 1♀, Mt. Baekunsan near Neahea, JN, Korea, 14 VIII 1995 (J.C. Paik), SCU; 1♀, the same place, 14 VIII 1995 (G.Sh. Lafer), IBP; 2♀, the same place, 19 VIII 1995 (G.Sh. Lafer), IBP; 2♀, the same place, 19 VIII 1995 (J.C. Paik), SCU.

*Distribution.* *P. jogaesanensis* is distributed in mountain forests of the southern and central Korea (JN: Mt. Jogyesan, Mt. Baekunsan; GN: Mt. Jirisan, Mt. Deogyusan; GB: Mt. Hwangaksan; GW: Mt. Seoraksan).

*Biological notes.* The female obtained at Mt. Baekunsan on July 14 possessed at least 7 eggs in abdomen; largest of them 2.25 × 1.25 mm.

*Etymology.* The name of this new species is derived from the locality of holotype, Mt. Jogyesan.

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